

ever, of very different kinds are provided with prehensile tails.

Amongst others may be mentioned tree-porcupines, certain opossums, and a small ant-eater. All these animals live on trees. But the mylodon and megatherium—though forest animals living in all probability exclusively on the foliage of trees, were far too bulky to climb them, or to be supported by their branches. They appear to have fed thus: raising themselves on their hind legs and tail (as on a tripod—like the kangaroos) they embraced trees with their powerful arms, and swaying them to and fro, gradually prostrated them in order to feed upon their leaves. It has been objected to this view of their probable habits, that if they acted in this way they must often get their heads broken. Well, strange to say, the heads of some fossils *have* had their heads broken and healed again, and their skull was specially constructed so as to obviate to a considerable extent the danger of fatal consequences ensuing from accidents of that kind.

The tails of some beasts are, as I have said, exceptionally hairy. The tails of others, however, are exceptionally hairy. Such is the case with the horse, which is called "long-tailed" when the tail is adorned with a clothing of very long hairs.

(To be continued.)

OUR ASTRONOMICAL COLUMN

BIELA'S COMET IN 1852.—In view of the probable approach to the earth's orbit of the two heads of Biela's comet in the present year, it is not without interest to recall the circumstances under which these bodies were last observed in the autumn of 1852. As soon as the calculated place of what was assumed to be the principal comet of 1846, according to Santini, was sufficiently removed from the sun's place to afford a chance of discovery, a search was commenced at several European observatories, notably by Secchi, at the Observatory of the Collegio Romano at Rome. The comet was not found in its computed position, and the cause of this is now known to have been the abandonment by Santini of his old semi-axis major, founded originally upon Damoiseau's calculation of the perturbations of mean motion between the appearances in 1805-6 and 1826, and the observations of those years and the substitution of a value deduced by Plantamour from the observations in 1845-46; had the original semi-axis been retained the comet would have been readily found by means of Santini's computations. Extending the limits of the search, therefore, Secchi detected a faint comet on the morning of August 26, 1852, some 6° from the calculated place, which Prof. Peters of Altona immediately pointed out as probably one portion of Biela's comet, from the rate and direction of its motion, as, indeed, it proved to be. (In *Memorie dell'Osservatorio del Collegio Romano, anni 1852-55*, the discovery is dated, by a misprint, August 16, civil reckoning, the first observation was made on August 25, at 16h. 14m. M.T.) This object was observed on several subsequent mornings, and on September 16 Secchi found the other head of the comet, following that previously observed about two minutes of time, and about half a degree to the south. With the great refractor at Pulkowa, M. Otto Struve found Secchi's comet of August 26, on September 18 (astronomical), or immediately after the notice reached him, and two mornings later, he observed both heads. Mr. James Breen, to whom Prof. Challis had intrusted the Northumberland equatorial at Cambridge for a search for the comet, found one portion of it on September 8, and observed it further on September 16 and 21. At Berlin one head was detected on September 17, and reobserved on September 22. M. Otto Struve, in his account of the Pulkowa observations, calls that head of the comet which was first observed by Secchi on August 25, A, and that found on September 15, using now astronomical dates, he calls B; the latter was the north-

preceding comet, the former the south-following one. A discussion of the observations of both heads, twenty-two in number, showed that those at Cambridge referred to A on all three mornings, and those at Berlin to B; both nuclei were observed at Rome on September 19 and 20, and at Pulkowa on September 20, 23, and 25. The appearance of the two portions of the comet is best described in M. Otto Struve's memoir, which is also accompanied by two admirably executed drawings, depicting their relative aspect on September 20 and 25, B on September 18 was at least 30" in diameter, with sensible brightening in the centre, but no decided nucleus, and the light of the comet was about equal to that of a star of Argelander's ninth magnitude. On September 20 A was easily seen with the finder of the large refractor, both heads were of about equal brightness, B might be a little the brighter, and exhibited a distinct nucleus; the nucleus of A was not so distinct as that of B, and there was a greater brightness of the nebulosity, as well as an extension of it in the direction of B; the apparent diameters about 1' and 40"; the diameter of B, which was circular, was estimated 40". On September 23 A was notably fainter than B, and without nucleus; the lengthened form of A was only seen with difficulty, but the sky was not quite transparent. On September 25 there was a remarkable change as compared with the relative appearance of the two heads five days before; A was materially fainter than B; the latter was very distinct in the finder, while the place of the former was hardly suspected; diameter of A about 30", that of B from 50" to 60". A was round, B slightly oblong; the brightest part of A was not in the centre of the nebulosity, but in the direction of B, and the nucleus of B was in the opposite direction to A, the brightest part of the nebulosity unequally distributed about the nucleus of B being turned away from A; the position-angle of this direction was 286°. On September 28, the last day of observation, the moonlight was strong, and B only was seen with difficulty. We give these details, not remembering to have seen them reproduced in this country; but the description fails to convey the impression made by comparing M. Otto Struve's drawings of September 20 and 25; were it not that we know to the contrary, it might almost be inferred therefrom that one portion of the comet had revolved round the other to the extent of 180°; their relative appearance had been wholly interchanged, and it will be remembered that about February 12, 1846, the secondary comet much exceeded in brightness the primary one, though this continued only three or four days, when the latter resumed its previous decided superiority. There was thus, as M. Struve remarks, the same interchange of brightness between the two nuclei at both appearances, and this he is inclined to attribute to a mutual action. It may, however, be remarked that the distance between them in 1852 was, according to Hubbard, 0.0193, or about 1,750,000 miles, which seems to militate against such an explanation, and rather to induce an idea of action inherent in the separate comets, or of influence exercised upon them through their approach to the sun. At M. Struve's observations of September 20, using Hubbard's elements, we find the distance of A from the earth was 1.492, and that of B, 1.483; while on September 25, the distance of A was 1.525, and of B, 1.511; so that there was no marked change of distance between the dates of his drawings.

VARIABLE STARS.—The following are Greenwich mean times of geocentric minima of *Algol* observable in this country during the last three months of the present year:—

	h. m.		h. m.		h. m.
Oct. 6 ...	15 57.6	Nov. 1 ...	11 16.1	Dec. 8 ...	17 52.1
9 ...	12 46.2	3 ...	8 4.9	11 ...	14 41.2
12 ...	9 34.9	18 ...	16 9.2	14 ...	11 30.3
15 ...	6 23.6	21 ...	12 58.2	17 ...	8 19.4
29 ...	14 27.3	24 ...	9 47.1	20 ...	5 8.5
		27 ...	6 36.1	31 ...	16 25.0

Minima of S Cancri occur on

		h.	m.		h.	m.
Oct. 7	...	9	17.6	Dec. 3	...	6 56.3
26	...	8	30.5	12	...	18 33.0
Nov. 14	...	7	43.3	22	...	6 9.9
				31	...	17 46.3

R Leporis will be at a maximum on October 3, and χ Cygni at a minimum on December 6 according to Schönfeld's elements, but the average period of late years, 406 days added to Schmidt's last well-determined epoch of minimum, October 11, 1878, would fix the next minimum on November 21; observations of this star are much to be desired, owing to the irregularities in the period which have been recently evident; the star is a little brighter than 13m. at minimum.

The star observed six times at Bonn in 1863 in R.A. 22h. 28m. 16^h 9s., Decl. $-8^{\circ} 21' 19''$ for 1855.0 is variable from 9m. to below 13^h 5m., and though long notified as a variable star, appears to have been little observed. It was invisible on November 9, 1874. Cooper estimated it 9m. on October 27, 1848, and it was equally bright in August, 1855. This object is not in Schönfeld's catalogue of 1875.

THE NEW MINOR PLANETS.—Names continue to be assigned to the newer discoveries in this group, though they can hardly be said to be invariably euphonious, at least to English ears. The last circular of the *Berliner Astronomisches Jahrbuch* states that the following selection has been made by the Berlin astronomers at the request of the discoverer, Herr Palisa, of Pola: for No. 192, *Nausikaa*; No. 195, *Eurykleia*; No. 197, *Arete*; and for No. 201, *Penelope*.

THE OUTER SATELLITE OF MARS.—The satellite *Deimos* was observed by Mr. A. A. Common, of Ealing, on the morning of September 22, or three weeks earlier than Prof. Asaph Hall expected that it would be observable with the Washington 26-inch refractor. Mr. Common's angle of position, measured with his new 36-inch silver-on-glass reflector, differs only $+1^{\circ} 8'$ from that assigned by Prof. Hall's elements.

NOTES

WE regret to have to announce the death of Mrs. Norman Lockyer, an occasional contributor to this journal and translator of several French works on popular science. Her husband's scientific work for the last eleven years owes whatever it may possess of merit to her constant interest, encouragement, and assistance. Her untimely death will be a shock to many men of science in many lands to whom she was personally known.

It will interest many of our readers to learn that Dr. William Jack, who has been an occasional contributor to NATURE, and is well known to most of those connected with it, has been unanimously elected to the chair of Mathematics in Glasgow University, recently vacated by Prof. Blackburn.

BARON FERDINAND VON MÜLLER, Government botanist of Victoria, has been rewarded for his Colonial services as a naturalist with the Knight Commandership of the Order of St. Michael and St. George.

THE death, on the 13th inst., is announced, of Mr. W. Wilson Saunders, F.R.S.

THE 110th anniversary of the birthday of Alexander von Humboldt was publicly celebrated by the Society of Cosmophiles at Leipzig on the 14th inst. A festival address was delivered by the secretary of the Society, Herr E. Haynel.

At the Berlin meeting of the German Astronomical Society on September 5-8 last the series of scientific communications

was opened by Dr. Förster, who minutely described the innovations recently made at the Berlin Observatory, which he subsequently invited the meeting to inspect. Prof. Bruhns, of Leipzig, spoke on the progress made in calculating the orbits of comets, Prof. Gylden, of Stockholm, pointing out a shorter method in these calculations. Prof. Winnecke then gave a description of the new Strassburg Observatory, and was followed by Dr. Drechsler, of Dresden, who made a communication on the collections belonging to the Royal Mathematical Saloon of Dresden. The last paper was by Prof. Schaffarick on variable stars. At the subsequent inspection of the Berlin Observatory the excellent arrangements to prevent damage to the instruments from variations in temperature were particularly admired. Great admiration was also elicited by the Astro-Physical Observatory at the Telegraphenberg, near Potsdam. The Society will meet again at Strassburg in 1881.

WE have already, in our "Notes," chronicled the "inauguration" of the Water Supply Exhibition at the Alexandra Palace by the Lord Mayor, on August 14. The exhibition is being held under the auspices of the committee for promoting a permanent water supply museum to be established somewhere in London, the lessees of the Palace kindly placing their exhibition court at the disposal of the committee for the purpose. The "inauguration" was fixed at a date when the exhibition was in a very rudimentary state; but as the Lord Mayor had given his patronage, and as he was leaving town on the 15th, it was felt undesirable to postpone it. The exhibition has grown slowly since then, though it is still far from coming up to the scheme as sketched out by the committee. The nature of the exhibition precludes its growing very rapidly, for the scheme does not appeal to many classes of exhibitors, and no commercial benefits are likely to accrue to contributors except in a few of the trade sections. It is understood that the Lord Mayor, accompanied by some of the provincial mayors, will visit the exhibition to-morrow (Friday), and will be entertained at lunch. This visit may help to draw attention to the effort to establish what might be made a very valuable institution.

THE statue to Arago was unveiled at Perpignan on September 20. Arago is represented as speaking and extending his arm towards the heavens. There are also three bas-reliefs. The first shows young Arago preparing for his examination at the Polytechnic School and studying without any master at the Old Perpignan fortifications. The second is the triumphant march from the Observatory to the Hotel de Ville, when Arago proclaimed the Republic in 1848; the great astronomer is leaning on Emanuel, his eldest son, now a member of the French Senate. The third relief represents Arago almost blind, sitting on his bed and composing his memoirs; Madame Langier, his niece, is writing what the great dying astronomer is dictating.

A METEOROLOGICAL station is to be established at Mont de Mignons, near Nice.

ONE feature of the last eruption of the remarkable volcano of Kilauea, in the Sandwich Islands, is the fact that the great molten lake of lava, occupying a huge caldron nearly a mile in width, and known as the "South Lake," was drawn off subterraneously, giving no warning of its movements and leaving no visible indication of its pathway or the place of its final deposit. "Other eruptions," writes Dr. Coan to Prof. Dana, in a letter dated June 20, "have blazed their way on the surface to the sea, or while on their subterranean way have rent the superincumbent beds, throwing out jets of steam or of sulphurous gases, with here and there small patches or broad areas of lava. But as yet no surface-marks of this kind reveal the silent, solemn course of this burning river. One theory is that it flowed deep in subterranean fissures, and finally dis-embogued far out at sea. Our ocean was much disturbed during those days, and we had what might be